PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Syuji Tsukamoto et al.
Application No.	:	10/691,851
Filed	:	October 23, 2003
For	:	METHOD FOR CUTTING A PHOTORESIST-COATED GLASS BOARD, CUTTING MACHINE FOR CUTTING A PHOTORESIST-COATED GLASS BOARD AND METHOD FOR MANUFACTURING AN OPTICAL RECORDING MEDIUM
Examiner	:	Maria Alexandra Elve
Art Unit	:	1725
Docket No.	:	890050.442
Date	:	October 4, 2007

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL APPEAL BRIEF

Commissioner for Patents:

This brief is in furtherance of the Notice of Appeal, filed in this case on May 24, 2007, and the Notice of Panel Decision from Pre-Appeal Brief Review, mailed on June 28, 2007. This brief is also in response to a Notification of Non-Compliant Appeal Brief issued by the Patent Appeal Center Specialist and mailed on September 5, 2007. The September Notification indicated that the claimed invention does not refer to the specification by page and line number for each independent claim. The fees required under Section 1.17(c), and any required request for extension of time for filing this brief and fees therefore, are dealt with in the accompanying transmittal letter.

I. REAL PARTY IN INTEREST

TDK Corporation is the assignee of the present application and is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF CLAIMS

Claims 1-3, 7, and 10-14 are pending. Claims 4-6, 8, and 9 are canceled. Claims 1-3, 7, and 10-14 were rejected in the Final Office Action mailed January 24, 2007. The rejection of claims 1-3, 7, and 10-14 is appealed.

IV. STATUS OF AMENDMENTS

An amendment to claims 1, 11, and 12 was filed subsequently to the Final Office Action mailed January 24, 2007. The amendments were not entered. The Advisory Action indicated that the amendments to claims 1, 11, and 12 "are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal."

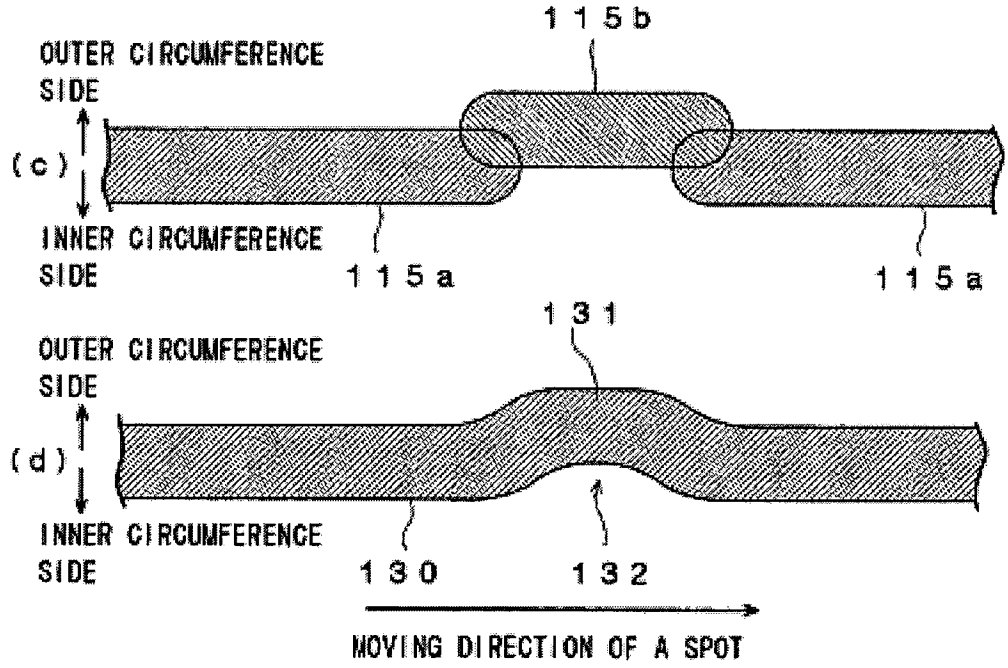
V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates to forming land pre-pits on a photoresist-coated glass board that is subsequently used to make an optical recording medium (Specification page 1, lines 2-9). Land pre-pits provide address information. A number of pits, called "land pre-pits" in the claims and in the Specification, are formed in a land region between neighboring grooves in the manufacturing process. When data are to be recorded in the optical recording medium, the address of a recording area is identified based on a land pre-pit signal obtained from the land pre-pits. A land pre-pit normally contains the address of the groove located on the inner circumference side thereof and is formed on the outer circumference side of a position (inflection point) where the groove wobbles to the most outer circumference side" (Specification page 4, lines 2-11).

Figures 3c and 3d, illustrated below, show how the invention forms a land pre-pit portion 131 in the groove of a rotating photoresist-coated glass board 120. According to the

present invention, two laser beams are projected in a selected sequence onto a board to create the land pre-pits. A first laser beam 101a is projected at spot 115a. A second laser beam 101b is projected at a different angle/position to form spot 115b, while blocking the first laser beam 101a. The laser beam 101a is offset from laser beam 110b to a predetermined extent (Specification page 17, lines 9-24).

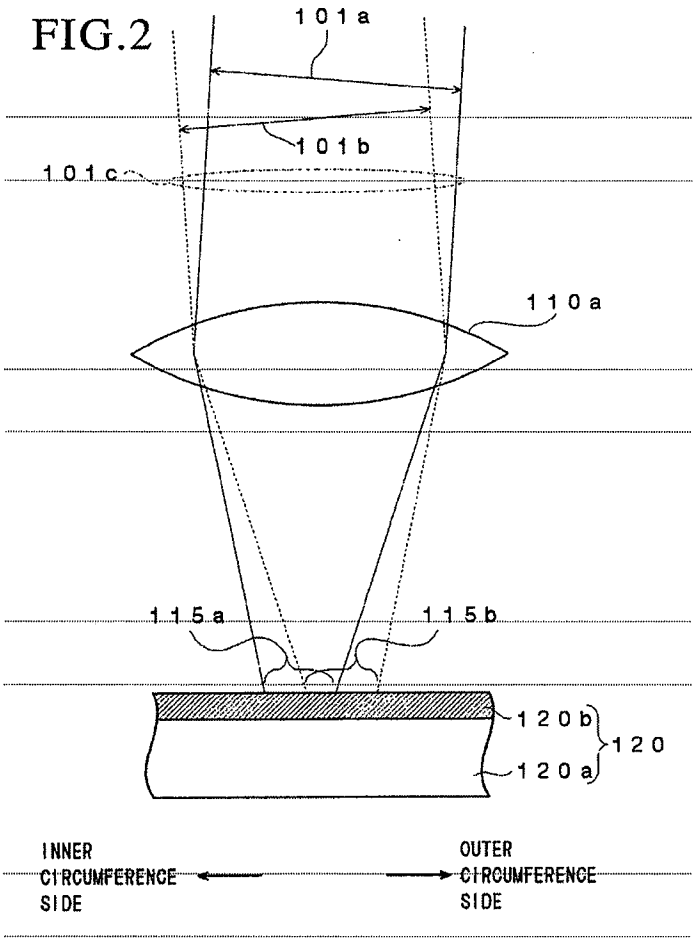
FIG.3



Of particular difficulty in the art, addressed by various embodiments of this invention, is the formation of the land pre-pit portion 131 (see Figure 3d above) on the photoresist-coated glass board 120. Figure 2[1], illustrated below, shows the relative orientations of the first laser beam 101a, projected onto the photoresist-coated glass board 120 at 115a, and the second laser beam 101b, projected onto the photoresist-coated glass board 120 at 115b.

[1] In preparing the Appeal Brief, Applicant's attorney noticed for the first time disagreement in reference numbers used in Figure 2. The illustrated references numerals 102, 102a, 102b should instead be 120, 120a, 120b, respectively, to correspond with the text of the Specification at paragraph 0065 and other figures. Applicants submit herewith a corrected replacement drawing sheet for this Appeal; entry is requested. However, if entry is denied, Applicants would be pleased to submit the corrected replacement drawing sheet at the discretion of the Board if correcting Figure 2 would facilitate Appeal of the case or after the hearing on the Appeal.

FIG.2



The first laser beam 101b, projected onto the photoresist-coated glass board 120 at 115a, exposes the rotating photoresist-coated glass board 120 to form a portion of the wobbled groove, as illustrated in the overhead-view of the groove in Figure 3b. At predetermined locations on the photoresist-coated glass board 120, the second laser beam 101b, projected at 115b (while blocking the first laser beam 101a), exposes the photoresist-coated glass board 120 to form the land pre-pit 131. After some brief period, the second laser beam 101b is no longer projected at 115b to expose the photoresist-coated glass board 120, and the first laser beam 101a is again projected at 115a to expose the photoresist-coated glass board 120. The exact locations of the blocking and unblocking is shown in Fig. 3b. When the final product is complete, the on-off edges are smoother and the land pre-pit 131 illustrated in Figure 3d is formed on the photoresist-coated glass board 120 (Specification page 19, line 22, through page 21, line 16).

The following shows exemplary claims 1, 11, and 12 with reference numerals illustrated in Figures 2, 3c, and 3d noted in brackets. The reference numerals are exemplary only and are not intended to limit the claims.

1. A method for cutting a photoresist-coated glass board [120], the method comprising:

intermittently projecting a first laser beam [101a] for forming a groove onto the photoresist-coated glass board [120] (Specification page 19, line 6, through page 21, line 16); and

intermittently projecting a second laser beam [101b] for forming land pre-pits [131] in synchronism with blocking the first laser beam [101a] onto the photoresist-coated glass board [120] so that a spot of the first laser beam [101a] is located on the inner circumference side of the photoresist-coated glass board [120] and a spot of the second laser beam [101b] is located on the outer circumference side thereof (Specification page 19, line 6, through page 21, line 16), thereby continuously and spirally forming an exposed region on the photoresist-coated glass board [120] (Specification page 17, lines 9-24).

11. A method for manufacturing an optical recording medium, comprising:

intermittently projecting a first laser beam [101a] for forming a groove onto the photoresist-coated glass board [120] (Specification page 19, line 6, through page 21, line 16);

intermittently projecting a second laser beam [101b] for forming land pre-pits [131] in synchronism with blocking the first laser beam [101b] onto the photoresist-coated glass board [120] so that a spot [115a] of the first laser beam [101a] is located on the inner circumference side of the photoresist-coated glass board [120] and a spot [115b] of the second laser beam [101b] is located on the outer circumference side thereof (Specification page 19, line 6, through page 21, line 16), thereby forming a raised and depressed pattern on a surface of the photoresist-coated glass board [120] (Specification page 12, line 19, through page 13, line 6);

forming a metal film on the surface of the photoresist-coated glass board [120] formed with the raised and depressed pattern (Specification page 22, lines 12-14);

transferring the raised and depressed pattern formed on the surface of the photoresist-coated glass board, thereby fabricating a stamper for an optical recording medium formed with the raised and depressed pattern on the surface thereof (Specification page 22, lines 19-26); and

transferring the raised and depressed pattern formed on the surface of the stamper onto a surface of a substrate, thereby forming a groove and land pre-pits [131] on the surface of the substrate (Specification page 23, lines 1-12).

12. A method for cutting a photoresist-coated glass board [120], the method comprising:

intermittently projecting a first laser beam [101a] for forming a groove onto the photoresist-coated glass board [120] (Specification page 19, line 6, through page 21, line 16); and

intermittently projecting a second laser beam [101b] for forming land pre-pits [131] in synchronism with blocking the first laser beam [101a] onto the photoresist-coated glass board [120] (Specification page 19, line 6, through page 21, line 16).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-3, 7, and 10-14 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Ahn et al.* (U.S. Patent 6,346,367), hereinafter *Ahn*, in view of *Mizuno* (U.S. Patent 6,421,307), hereinafter *Mizuno*.

VII. ARGUMENT

A. Summary that the Rejection Under *Ahn* Modified by *Mizuno* is Improper

The rejection of the claims by *Ahn* in view of *Mizuno* is improper for at least the following reasons:

1. *Ahn* discloses nothing with respect to forming land pre-pits. *Ahn* discloses a system and method for forming data (information pits 12). *Mizuno* also fails to disclose forming land pre-pits. Accordingly, the proposed combination of *Ahn* in view of *Mizuno* does not disclose forming land pre-pits.

2. *Ahn* discloses *forming data* (information pit 12) by *concurrently* projecting two laser beams onto a photoresist-coated glass board, thereby forming projection 122. *Mizuno* is directed to a system and method which relates to an optical device for use in *receiving* and *detecting* a *returned* light reflected from an irradiated *data* portion of an optical recording medium. Accordingly, even if *Ahn* is modified by any features disclosed in *Mizuno*, the modified *Ahn* system still concurrently projects two laser beams to form an information pit 12 with a projection 122 therein.

3. *Ahn* discloses forming data (an information pit 12) having a projection 122 which greatly scatters light reflected from the data. If *Ahn* is modified as proposed by the Office Action so that the second laser beam LB2 is projected while blocking the first laser beam LB1, the projection 122 *would not be formed*. Thus, the modified *Ahn* system would no longer operate as intended, and would therefore fail in that the benefit of the projection 122 (which greatly scatters reflected light) is no longer realized. Furthermore, since the projection 122 is no longer present to scatter light reflected from the data, the principal of operation of *Ahn* has been impermissibly changed.

4. There is no teaching in either reference of how to properly synchronize two laser beams to form land pre-pits.

B. *Ahn* Modified by *Mizuno* Fails to Disclose, Teach, or Suggest Forming Land Pre-Pits

Ahn in view of *Mizuno* fails to disclose anything with respect to forming land pre-pits. None of the prior art cited by the Examiner even discussed land pre-pits, a claimed feature. It is well-established at law that, for a proper rejection of a claim under 35 U.S.C. § 103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, *e.g.*, *In re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

That is, claim 1 is allowable because the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for cutting a photoresist-coated glass board comprising "intermittently projecting a first laser beam to form a groove onto the photoresist-coated glass board" and "intermittently projecting a second laser beam *to form land pre-pits* in synchronism with blocking the first laser beam" as recited in claim 1 (emphasis added). Claim 11 is allowable because the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for manufacturing an optical recording medium comprising "intermittently projecting a first laser beam to form a groove onto the photoresist-coated glass board" and "intermittently projecting a second laser beam *to form land pre-pits* in synchronism with blocking the first laser beam" as recited in claim 11 (emphasis added). Claim 12 is allowable for at least the reason that the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for cutting a photoresist-coated glass board comprising "intermittently projecting a first laser beam to form a groove onto the photoresist-coated glass board" and "intermittently projecting a second laser beam *to form land pre-pits* in synchronism with blocking the first laser beam onto the photoresist-coated glass board" as recited in claim 12 (emphasis added).

Ahn fails to disclose anything regarding forming land pre-pits. *Mizuno* also fails to disclose anything regarding forming land pre-pits. Since both *Ahn* and *Mizuno* fail to disclose forming land pre-pits, the proposed combination of *Ahn* in view of *Mizuno* completely fails to disclose forming land pre-pits as required by *In re Dow Chemical* or *In re Dow Keller*. That is, one of ordinary skill in the art, after considering the proposed combination of *Ahn* in view of *Mizuno*, will have learned nothing with respect to forming land pre-pits on a photoresist-coated glass board (because both *Ahn* and *Mizuno* are silent about forming land pre-pits).

Therefore, a *prima facie* case establishing an obviousness rejection by *Ahn* in view of *Mizuno* has not been made. Thus, claims 1-3, 7, and 10-14 are not obvious under the proposed combination of *Ahn* in view of *Mizuno*. Accordingly, the rejection should be withdrawn for at least this reason alone.

C. *Ahn* Modified by *Mizuno* Fails to Disclose, Teach, or Suggest Intermittently Projecting Two Laser Beams

Claim 1 is allowable for at least the reason that the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for cutting a photoresist-coated glass board comprising "*intermittently projecting* a *first laser beam* to form a groove onto the photoresist-coated glass board" and "*intermittently projecting* a *second laser beam* to form land pre-pits *in synchronism with blocking the first laser beam*" as recited in claim 1 (emphasis added).

Ahn does not disclose, teach, or suggest intermittently projecting a first laser beam and intermittently projecting a second laser beam while blocking the recited first laser beam. In contrast, *Ahn* discloses a system where two laser beams LB1 and LB2 are *concurrently* projected onto the optical recording medium (column 3, lines 20-30) such that the projection 122 is formed in an information pit 12. *Ahn* Figure 5B illustrates the projection 122 resulting from the concurrently projected laser beams LB1 and LB2. In order to form the projection 122, both *Ahn* beams LB1 and LB2 must be concurrently projected onto the optical recording medium. If only one of the laser beams LB1 or LB2 are projected onto the photoresist-coated glass board, the projection 120 *would not* be formed as disclosed in *Ahn*.

Mizuno also fails to disclose intermittently projecting a first laser beam and intermittently projecting a second laser beam while blocking the first laser beam. *Mizuno* discloses a system for analyzing light returned from an optical recording medium with data marks stored onto the grove of the optical recording medium. That is, the optical recording medium of *Mizuno* has already been formed with the groove and land pre-pits thereon, and already has data recorded in the groove. *Mizuno* is merely reading the recorded data by analysis of the return light (LR). There is nothing in Mizuno about the selective blocking of one of two provided laser beams at known intervals to form data and land pre-pits, respectively.

Mizuno Figure 1 shows "an example of a conventional optical pickup 81 that is exclusively used for reproducing a compact disc (CD). This optical pickup 81 comprises a semiconductor laser 82, a diffraction grating 83, a beam splitter plate 84, an objective lens 85 and a light-receiving element 86 composed of a photo-diode. A laser light L from the semiconductor laser 82 is reflected on the beam splitter plate 84, converged by the objective lens

85 and thereby irradiated on an optical disk 90. A returned light reflected on the optical disk 90 is traveled through the objective lens 85 and the beam splitter plate 84 and received and detected by the light-receiving element 86" (column 1, lines 25-36). In *Mizuno* "*returned* light LR from the pit P is converged by the objective lens 3, a knife edge KE is located at the confocal position of the returned light and a returned light split by the knife edge KE is detected by the right-hand side and left-hand side quadrant photo-detectors PD_R ... and PD_L ... . Incidentally, FIG. 11B is a diagram showing the right-hand side portion of FIG. 11A in an enlarged-scale, and *illustrates the state in which the returned light that was converged up to the diffraction limit is split by the knife edge*" (column 10, lines 7-18; emphasis added).

Considering both references in combination, even if the *Ahn* system *is modified* by the *Mizuno* optical disk reading system, at most, the returned beam of light reflected from the optical recording medium would be split by the *Mizuno* knife edge KE, and then analyzed as disclosed by *Mizuno*. Accordingly, even after the *Ahn* system *is modified* by the *Mizuno* system which analyzes returned light that has been split with knife edge KE, both *Ahn* laser beams LB1 and LB2 would still be concurrently projected onto the photoresist-coated glass board.

Claim 11 is allowable for at least the reason that the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for manufacturing an optical recording medium comprising "*intermittently projecting* a *first laser beam* to form a groove onto the photoresist-coated glass board" and "*intermittently projecting* a *second laser beam* to form land pre-pits *in synchronism with blocking the first laser beam*" as recited in claim 11 (emphasis added). Claim 12 is allowable for at least the reason that the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for cutting a photoresist-coated glass board comprising "*intermittently projecting* a *first laser beam* to form a groove onto the photoresist-coated glass board" and "*intermittently projecting* a *second laser beam* to form land pre-pits *in synchronism with blocking the first laser beam* onto the photoresist-coated glass board" as recited in claim 12 (emphasis added).

Therefore, a *prima facie* case establishing an obviousness rejection by *Ahn* in view of *Mizuno* has not been made. Thus, claims 1-3, 7, and 10-14 are not obvious under the proposed combination of *Ahn* in view of *Mizuno*. Accordingly, the rejection should be withdrawn for at least this reason alone.

D. *Ahn* Modified by *Mizuno* Fails to Operate As Intended

MPEP § 2143.01, section V, entitled "THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE" states that "if the proposed modification would render the prior art invention being modified unsatisfactorily for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Goredon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)." MPEP § 2143.01, section VI, entitled "THE PROPOSED MODIFICATIONS CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE" states that "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959)."

Because the proposed modification of *Ahn* by *Mizuno* would render the modified *Ahn* system useless and therefore unsatisfactory for its intended purposes, a *prima facie* case of obviousness can not be established. Furthermore, because the principle of operation of *Ahn* after modification by *Mizuno* would be changed, a *prima facie* case of obviousness can not be established. Accordingly, the rejection of claims 1-3, 7, and 10-14 under 35 U.S.C. § 103(a) should be withdrawn.

More particularly, if the *Ahn* system is modified by *Mizuno* to block one of the projected beams LB1 and LB2, then the blocking of one of the beams would result in formation of a data mark (information pit 12) that does not have the requisite projection 122. Projection 122 is an essential feature of *Ahn* for at least the following reason. *Ahn* discloses that "to reproduce the information recorded on the optical disk 10, a laser beam LB irradiated onto the information pit 12 is *scattered by the projection 122* while the laser beam LB is irradiated onto the reference surface 11 of the optical disk 10 by an optical pickup (not shown) incorporated in the recording/reproducing apparatus. Accordingly, with regard to the laser beam LB irradiated onto the information pit 12, *the amount of the laser beam LB reflected toward the optical pickup is greatly decreased*. Thus, in the optical disk 10 according to the embodiment of the present invention, a *difference between the amounts of the laser beams reflected* toward the optical pickup from the reference surface 11 and from the information pit 12 *becomes greater than in*

the conventional optical disk 1. Accordingly, the amplitude and resolution of a reproduced signal are increased, that is, *the reproduction characteristics are improved*" (column 2, line 59 through column 3, line 7; emphasis added).

The Office Action proposes to modify the *Ahn* system so that the second laser beam LB2 is projected while blocking the first laser beam LB1. However, if the *Ahn* system is so modified, projection 122 would no longer be formed (since forming projection 122 requires that both laser beams LB1 and LB2 be concurrently projected). In the absence of projection 122, the amount of the laser beam LB reflected toward the optical pickup would not be as greatly decreased as disclosed in the *Ahn* system. Thus, the modified *Ahn* system forms an information pit 12 (without projection 122) that is unsatisfactory for its intended purpose of forming information pits 12 that greatly scatter reflected light (since the projection 122 is absent).

Furthermore, the *Ahn* system forming an information pit 12 with projection 122 relies on the principal of operation that the laser beam LB irradiated onto the information pit 12 is more greatly scattered by the projection 122. In the absence of projection 122, the laser beam LB reflected toward the optical pickup would not scattered as disclosed in the *Ahn* system. Thus, the modified *Ahn* system forms an information pit 12 (without projection 122) that results in a changed principal of operation.

In the absence of the projection 122, it appears that the *Ahn* apparatus would be rendered unsatisfactory for its intended purpose and would have its principle of operation changed. In fact, it would be so changed as to be inoperative.

Accordingly, it is improper to modify *Ahn* using *Mizuno* as proposed pursuant to MPEP § 2143.02, sections V (and *In re Goredon*) and/or VI (and *In re Ratti*). Therefore, a *prima facie* case establishing an obviousness rejection by *Ahn* in view of *Mizuno* has not been made. Thus, claims 1-3, 7, and 10-14 are not obvious under the proposed combination of *Ahn* in view of *Mizuno*. Accordingly, the rejection should be withdrawn for at least this reason alone.

E. There Is No Teaching In Either Reference On How to Synchronize the Block Of the Two Laser Beams.

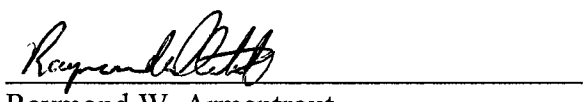
Ahn teaches two laser beams that are on the entire time. *Ahn* provides no provision for blocking one laser beam while having the other laser beam on. This is done in *Ahn* for forming data (not grooves and land pre-pits).

Mizuno teaches nothing about blocking a laser beam while forming a groove or data path. *Mizuno*'s only teachings for blocking a laser beam is in reading a return light reflected from the data encoded on a disc. *Mizuno* certainly provides no teaching for blocking any *projected* laser beams for forming a groove while using another laser beam to form a land pre-pit at a selected location on the groove.

Even if *Mizuno* could be constructed to be teaching blocking a projected laser beam, there is no teaching in either reference on how to control the timing of the blocking of laser beams so that one laser beam forms a groove and the other laser beam forms a land pre-pit.

This failure of either reference to even suggest how to control this timing makes clear that the combination of *Ahn* in view of *Mizuno*, even if made, does not render the invention obvious. Therefore, a *prima facie* case establishing an obviousness rejection by *Ahn* in view of *Mizuno* has not been made. Thus, claims 1-3, 7, and 10-14 are not obvious under the proposed combination of *Ahn* in view of *Mizuno*. Accordingly, the rejection should be withdrawn for at least this reason alone.

Respectfully submitted,
Seed Intellectual Property Law Group PLLC



Raymond W. Armentrout
Registration No. 45,866

RWA:cl

701 Fifth Avenue, Suite 5400
Seattle, Washington 98104
Phone: (206) 622-4900
Fax: (206) 682-6031

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VIII. CLAIMS APPENDIX

1. A method for cutting a photoresist-coated glass board, the method comprising:

intermittently projecting a first laser beam for forming a groove onto the photoresist-coated glass board; and

intermittently projecting a second laser beam for forming land pre-pits in synchronism with blocking the first laser beam onto the photoresist-coated glass board so that a spot of the first laser beam is located on the inner circumference side of the photoresist-coated glass board and a spot of the second laser beam is located on the outer circumference side thereof, thereby continuously and spirally forming an exposed region on the photoresist-coated glass board.

2. The method for cutting a photoresist-coated glass board in accordance with Claim 1, further comprising:

blocking the second laser beam so as to prevent portions of the exposed region from being aligned with each other in the radial direction of the photoresist-coated glass board if at least an adjacent portion of the exposed region in the radial direction has been formed by irradiation with the second laser beam.

3. The method for cutting a photoresist-coated glass board in accordance with Claim 1, further comprising:

condensing the first laser beam and the second laser beam using a common objective lens.

4-6. (Canceled)

7. The method for cutting a photoresist-coated glass board in accordance with Claim 1, wherein the second laser beam is projected onto the photoresist-coated glass board within the period that the first laser beam is blocked.

8-9. (Canceled)

10. The method for cutting a photoresist-coated glass board in accordance with Claim 1, further comprising:

condensing the first laser beam and the second laser beam using a common objective lens.

11. A method for manufacturing an optical recording medium, comprising:

intermittently projecting a first laser beam for forming a groove onto the photoresist-coated glass board;

intermittently projecting a second laser beam for forming land pre-pits in synchronism with blocking the first laser beam onto the photoresist-coated glass board so that a spot of the first laser beam is located on the inner circumference side of the photoresist-coated glass board and a spot of the second laser beam is located on the outer circumference side thereof, thereby forming a raised and depressed pattern on a surface of the photoresist-coated glass board;

forming a metal film on the surface of the photoresist-coated glass board formed with the raised and depressed pattern;

transferring the raised and depressed pattern formed on the surface of the photoresist-coated glass board, thereby fabricating a stamper for an optical recording medium formed with the raised and depressed pattern on the surface thereof; and

transferring the raised and depressed pattern formed on the surface of the stamper onto a surface of a substrate, thereby forming a groove and land pre-pits on the surface of the substrate.

12. A method for cutting a photoresist-coated glass board, the method comprising:

intermittently projecting a first laser beam for forming a groove onto the photoresist-coated glass board; and

intermittently projecting a second laser beam for forming land pre-pits in synchronism with blocking the first laser beam onto the photoresist-coated glass board.

13. The method in accordance with claim 12 wherein a spot of the first laser beam is located on the inner circumference side of the photoresist-coated glass board and a spot of the second laser beam is located on the outer circumference side thereof.

14. The method in accordance with claim 12, further comprising:

continuously and spirally forming an exposed region on the photoresist-coated glass board with the groove and land pre-pits.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.